OK to enter substitute specification

A SIMPLE, COMPACT AND EFFECTIVE SELF-EXTENDING AND RETRACTING BICYCLE CRANK ARM

FIELD OF THE INVENTION

[0001] This invention relates to a bicycle crank and pedal assembly with a self-extending and retracting crank arm.

BACKGROUND OF THE INVENTION

[0002] This invention relates to a bicycle crank and pedal assembly and, more particularly, to an assembly with a self-extending and retracting crank arm.

[0003] The length of the crank arm in a bicycle is a compromise between performance and comfort. A longer arm allows a cyclist to travel at the same speed with a lower pedal effort or a slower pedal turning rate, or both. However, the longer arm increases the size of the pedal track round the crank axle and causes discomfort to the leg. One method to get the benefit of a longer arm without getting the discomfort is to extend the arm beyond the compromised length during the pedal power down stroke and retract it below this length in the return upstroke.

[0004] Using a longer crank arm is not equivalent to using a lower gear ratio in cycling. A lower gear ratio allows the cyclist to travel with a lower pedal effort. However, it also requires the cyclist to turn the pedal at a higher rate in order to travel at the same speed.

[0005] Crank and pedal assemblies with self-extending and retracting crank arms have been described by Chattin (U.S. Pat. Nos. 4,446,754, 4,519,271), Xi (U.S. Pat. No. 4,706,516), Stuckenbrok (U.S. Pat. No. 4,807,491), Trevizo (U.S. Pat. No. 4,882,945), Sander (U.S. Pat. No. 4,960,013), Fortson (U.S. Pat. No. 5,095,772), Garneau (U.S. Pat. No. 5,207,119), Ticer and Farney (U.S. Pat. No. 5,261,294), Yan and Kim (U.S. Pat. No. 5,553,515), Wan (U.S. Pat. No. 5,566,590), Debruin (U.S. Pat. No. 5,879,017), Kang, Kim and Park (U.S. Pat. Nos. 6,152,471, 6,508,146), Harrington (U.S. Pat. Nos.